CAMBRIDGE • LEXINGTON • LINCOLN • WALTHAM • WESTON

FROM THE SOURCE

NEWSLETTER OF THE CAMBRIDGE WATER DEPARTMENT SOURCE PROTECTION PROGRAM

VOL. 4, NO. 1, WINTER 2000

DEP's Prescription for Preserving Groundwater

With every new development project comes the threat of impaired water resources. New asphalt and buildings create impervious ground surfaces, covering over areas that once allowed rain water to infiltrate into the ground and slowly feed the aquifers and rivers over periods of months and years. Once the impervious cover is laid, rain water is diverted rapidly to storm drain systems and waterways. Groundwater reserves are consequently depleted, potentially lowering the levels of rivers and lakes and exhausting drinking water supplies.

To protect groundwater reserves from such threats, the Massachusetts Department of Environmental Protection (DEP) adopted Stormwater Management Standard #3, one of nine standards set out in November 1996 to promote better stormwater management for new construction and redevelopment.

Standard #3 requires that the annual groundwater recharge after development approximate annual recharge before development. To accomplish this, a developer must take all reasonable steps to meet the infiltration standard. The process must include deciding which best management practices (BMPs) are most effective and where they would be best applied. The most commonly applied BMP to address Standard #3 is the infiltration basin, which holds stormwater and allows it to infiltrate slowly.

All infiltration basins, except those that collect rooftop runoff from non-industrial buildings, will require pretreatment to prevent solids from clogging up the underlying soils and to minimize maintenance costs. Additional treatment may be required to prevent groundwater contamination, especially where the groundwater serves as a community's drinking water.

While DEP has found Standard #3 to be conceptually sound, the agency has had several problems implementing the standard. According to DEP regional planner Tom Maguire, the major difficulty with applying the standard in the field has been providing consistent sizing of the infiltration basins. For example,

...continued on page 2

The Beaver Boom... or Bust

In 1996, voters of Massachusetts were asked to consider what comprises humane treatment of wildlife, including the beaver. Their decision to ban a series of animal traps has had two inadvertent consequences. The ban could mean not only a threat to the quality of drinking water reservoirs but also an ecological catastrophe for the state's beaver population.

Susan Langlois, a wildlife biologist at MassWildlife (the state Department of Fisheries, Wildlife, and Environmental Law Enforcement), notes that the trap ban prompted a dramatic decline in

Photo by Bill Byrne, MassWildlife

....continued on page 2

Beaver...

continued from page 1

the number of licensed trappers since 1996. In the same period, the number of beavers trapped each year in Massachusetts has fallen from 1300 to 100, while the population has risen exponentially from 24,000 to greater than 52,000.

The population increase has forced beavers to expand their range into areas that only marginally meet their needs. Such areas include water reservoirs which, due to fluctuating water levels and poor tree species, are normally considered poor habitat.

Dan Clark, a wildlife biologist at the Metropolitan District Commission's Division of Watershed Management, states that it is "unnecessary and impractical" to attempt to control beavers throughout a watershed. However, beavers must be controlled at the point where water leaves a reservoir and enters the drinking water supply system. Once beavers make this location their home, they threaten the reservoir's integrity as a drinking water source by damming up the water flow and introducing a large amount of fecal waste.

The population boom is also provoking an ecological crisis. Beavers must move to a new habitat after several years once the habitat can no longer provide them with a fresh abundant supply of running water and their food supply is depleted. They must then search for a new dwelling place that provides such benefits as high water availability, security, sustenance, and the ability to build a pond that won't freeze to the bottom. If the beaver population is so dense that no more good or marginal habitat is available, beavers will have degraded all possible habitat beyond livability. The beaver population may then crash. Langlois notes this could happen in 15 to 20 years if no preventive action is taken.

A bill is under consideration in the Massachusetts legislature to reinstate the body-gripping trap. This trap, declared humane by the European Union, Canada, and Russia, is typically set under water and is designed to kill a beaver immediately. Langlois says that its reinstatement would be a welcome tool for starting to control the beaver's numbers again, but a much greater effort will be required to bring the population down to a manageable level.

DEP...

continued from page 1

two engineers whose projects are located in areas with similar precipitation patterns and site conditions could draw up infiltration basins that hold very different volumes of storm water while technically falling within the standard's guidelines. As initially written, the standard doesn't provide enough information to ensure that these engineers design basins with similar recharge volumes.

Since 1997, a citizens advisory committee organized by DEP has been devising a new methodology for calculating the volume recharge. This methodology, by more accurately addressing how precipitation affects recharge, should bring more consistency to the standard. Maguire hopes that the refurbished standard will be ready for implementation this spring. Workshops will be conducted to assist design engineers, conservation commissions, and the public in using the new methodology.

What Infiltration BMPs Are Being Applied In Your Town?

BMP Type	Town			
	Cambridge	Lincoln	Waltham	Weston
Extended Detention Pond/ Detention Basin	X		X	X
Wet Pond			X	
Vegetated Water Quality Swale	X	X	X	
Infiltration Trench		X		
Infiltration Basin/ Retention Basin	X			
Dry Well				X
Other	natural infiltration through grass			

As part of a project funded by DEP, the Charles River Watershed Association designed and administered a survey to Conservation Commissions for towns in the Charles River Watershed. Four of the five towns within the Cambridge watershed responded. This table summarizes the types of infiltration BMPs used in the towns for a sampling of development or redevelopment projects over an 18-month period.

RLF Re-Energizes Land Conservation in Lincoln

Significant parcels of land which help define the Town of Lincoln's natural and cultural landscape may soon be lost forever. Recognizing this, the Rural Land Foundation (RLF) has launched an initiative to help protect the last remaining lands of conservation interest in town. Many of these properties are within the Cambridge and Stony Brook Reservoir watersheds giving added importance for helping to protect Cambridge's water supply. As part of its new initiative, RLF has recently secured protection of most of the 51- acre Hunsaker property, within the Stony Brook Reservoir Watershed, off Weston Road in Lincoln.

Rural Land Foundation

The Rural Land Foundation (RLF), established in 1965, is one of three conservation groups (Lincoln Land Conservation Trust and the Conservation Commission being the other two) dedicated to maintaining Lincoln's land heritage — attempting to ensure that as Lincoln steadily changes, important land is not lost forever. The RLF is a non-profit organization guided by 16 Trustees and an Executive Director (Geoff McGean) which:

- Identifies lands of conservation interest.
- Works with Lincoln residents who want to preserve their own land or who have identified land to remain open.
- Protects land through acquisition, preservation, and limited development conserving as much open space as possible.

Hunsaker Property

Working with the Hunsaker family, long-time Lincoln residents, the Rural Land Foundation purchased the property at a bargain sale. RLF was then able to find "conservation buyers" interested in limiting the amount of development and maximizing the amount of conservation land. The end result is that over 37 acres of land will be in public conservation or contain permanent private conservation restrictions. A maximum of only two new single family houses can be built on the entire property. In addition, public trails will allow for access to much of the land and connect with existing conservation trails.

The protected land contains a diversity of habitat including upland forest, meadow, and vernal pools. In addition, a large red maple swamp and an intermittent stream which eventually flows into Stony Brook will be permanently protected.

Intermittent stream seen on Hunsaker property.

Future Projects

RLF has already begun discussions with several other landowners in Lincoln who have property identified by the town as land of conservation interest. Although Lincoln has protected over 2,000 acres of land over the past 4 decades, there are still over 20 properties which are of significant importance. RLF hopes that, through a collaborative effort with landowners, neighbors and other town residents, the Lincoln Land Conservation Trust, the Conservation Commission, and other conservation organizations, that much of the remaining lands in town can be permanently protected.

For more information, contact Geoff McGean, RLF at (781) 259-9250.

From the Source is a quarterly report from the Cambridge Water Department's (CWD's) Watershed Management Division. The purpose of this newsletter is to inform all stakeholders and interested people of the issues, techniques, and progress in implementing the CWD Source Protection Program.

From the Source is produced by the Charles River Watershed Association (CRWA) under contract to CWD. To be added to the mailing list for future issues, call CRWA at 617-965-5975. *From the Source* is also available on line at http://www.ci.cambridge.ma.us/~Water/

The City of Cambridge Water Department (CWD) does not discriminate on the basis of disability. The CWD will provide auxillary aids and services, written materials in alternative formats, and reasonable modifications in policies and procedures to persons with disabilities upon request.

Editor: Pam DiBona, CRWA
Writer: Dudley Bonsal, CRWA
Layout: Peg Savage, CRWA
Project Manager: Chip Norton, CWD

FROM THE SOURCE

Cambridge Water Department
100 Smith Place
Cambridge, MA 02138

Printed on recycled paper with soy-based ink.

BMP of the Season:

Street Sweeping

Street sweeping in winter? It's true. New vacuum and air system technologies have made the sweepers more effective at picking up fine-grained sediments. In addition, some new sweepers have recently been developed to work effectively in wet and frozen conditions. For the older line of machines in which moisture is a deterrent, the street sweeper can be used well in the winter if properly timed. Before the spring thaw allows pollutants to be washed into the waterways, the sweeper can be mobilized to remove them during a winter dry spell.